

Overview of The National Health Information Infrastructure (NHII) v.2003

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The Past & Future of Care: Defining Attributes

Health as a Social Good

- Acute, Episodic
- Patient passive
- Great deference to health professionals

- Personal memory-based

- No systems awareness

Health as Economic Good

- Chronic, Acute, Preventive
- Patient active
- Accountable/effective, safe, efficient, timely, equitable
- Knowledge Managed; Protocol/process support
- Team-based with System IT
- Personal & Population



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A National Health Integrating 'Infostructure' is Healthcare's Moon shot

- Apollo Program advantage
 - With both feet still firmly on the ground, you could see a clear target overhead.
- My personal goal for this meeting

Sharpen Our Focus



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The First Wealth is Health.

- Ralph Waldo Emerson

A Vision for Health Communications

- NHII is ...‘the set of values, systems, standards, applications, technologies, & laws that support **all** facets of **individual health, health care, and public health.**’

– NCVHS 2000

An International Health Development

Comprehensive Visions:

Australia, Canada (*Infostructure*), England (I#H),
Hong Kong, Malaysia, New Zealand (*WAVE* –
Working to Add Value through E-Information), Singapore,
U.S.A. (*NHII- 'Paperless' Healthcare*)

Smart Cards for authentication (unique personal identifiers):

England, France, Germany, Italy, Spain



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The Vision's Goal

- The broad goal of the NHII is to **deliver information** to individuals – consumers, patients, and professionals – when and where they need it, so they can use this information **to make informed decisions** about health and healthcare.

– NCVHS 2000

‘Supporting All Facets of Individual Health, Healthcare, & Public Health’ (includes Research & Evaluation)

- **Values & Systems**
- Standards
- Applications
- Technologies
- Laws

When Health is absent,
Wisdom cannot reveal itself,
Art cannot become manifest,
Strength cannot be exerted,
Wealth is useless & Reason
powerless.

- Herophiles, 300 B.C.



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An Integrating *Information* Infrastructure

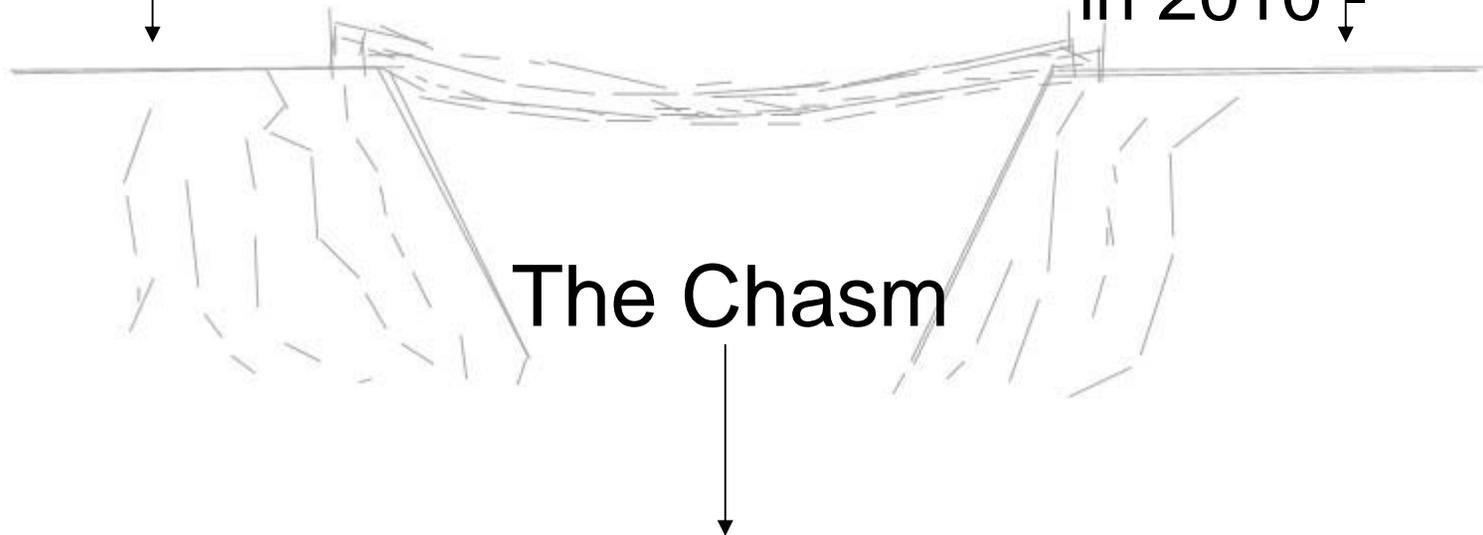
There must be a renewed national commitment to building an information infrastructure to support **health care delivery, consumer health, quality measurement & improvement, public accountability, clinical & health services research, & clinical education.**

- IOM Report, “Crossing the Quality Chasm” 2001 (see www.nap.edu)

Healthcare in
year 2000.



Healthcare
with
'paperless
Healthcare'
in 2010 ↓



Chasm Edge 2000 (left side)

- 90 % of annual 30 billion health transactions done by phone, fax or mail.
- Fewer than 5% of prescriptions from US physicians are managed electronically.
- Most healthcare organizations spend 1-4 % on IT vs. 8.5% in relevant industries.

Health Care Systems are in Need of Fundamental Change.

Dx: Unsafe, costly, inefficient

The current care systems cannot do
the job. Trying harder will not work.

Changing systems of care will.



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- IOM: Crossing the Quality Chasm

Values & Systems

Healthy Individuals & Healthy Communities

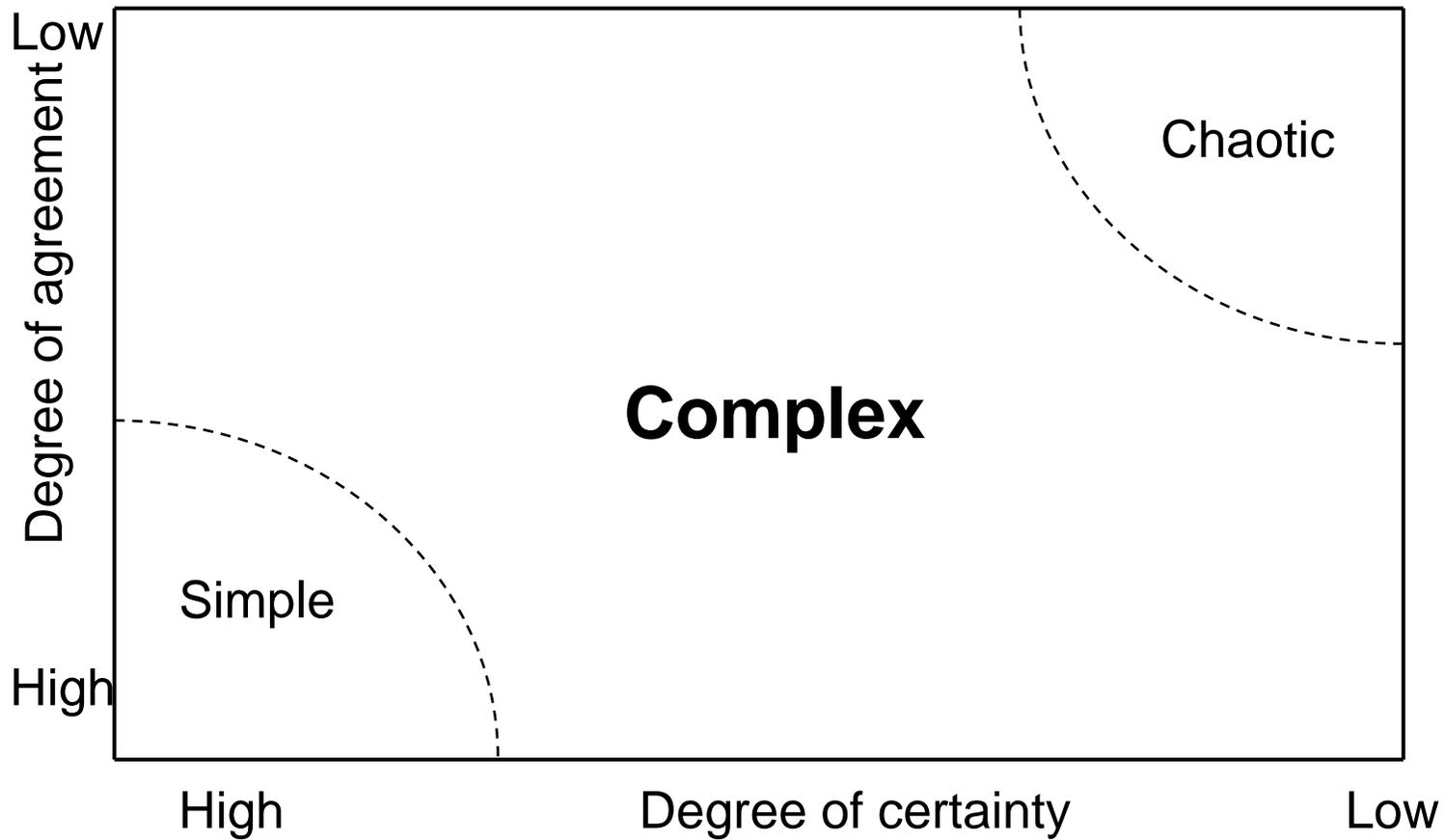
Support personal &
community health decisions
using the best available
knowledge & support.



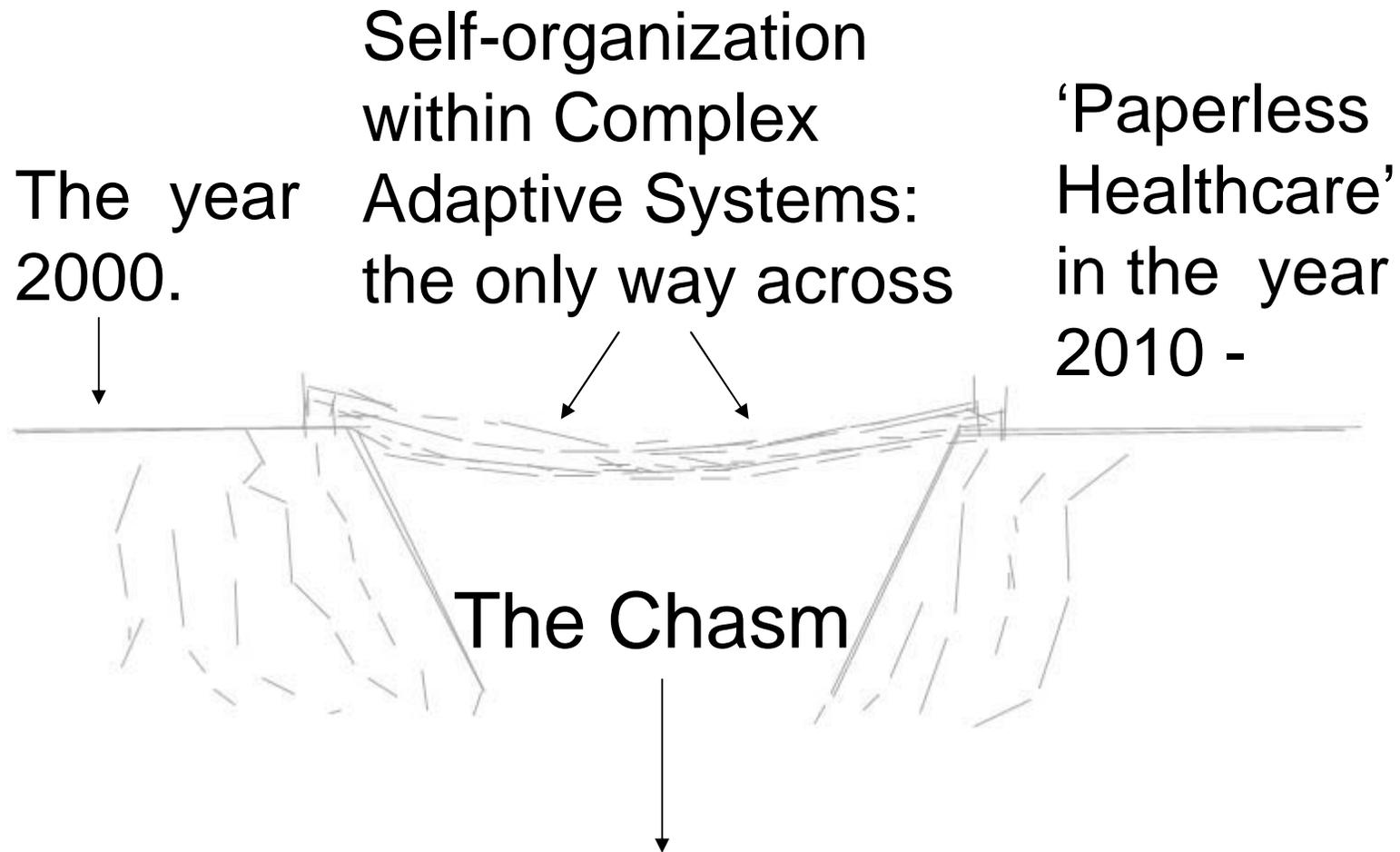
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Health Care Systems are Complex



Achieving Goals in Complex Systems

- In Command & Control models, Newton's laws of motion can calculate how to do so
 - Works well for inanimate materials like a rock.
- It fails if you throw a bird!
 - A bird is a complex adaptive system.
- True despite both being subject to the same laws of physics
 - adapted from Jake Chapman

Solution: Coordination & Integration

Leading Change in Complex Adaptive Systems

- Set simple rules & minimum specifications
- Create conditions for system to evolve over time
- Create space for creativity & local actions within the system
- This is “Self-organisation.”



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Complex Adaptive Systems: Birds, Herds, Schools

Observe 3 simple rules:

- Move to the center of the group.
- Keep up with the group.
- Don't hit anyone.

- Reynolds 1987

Six Rules for the Health Care Delivery System

- Safe
- Effective
- Person/Patient-Centered
- Timely
- Efficient
- Equitable

- *IOM: Crossing the Quality Chasm*, 2001

Connections for Healthcare Delivery

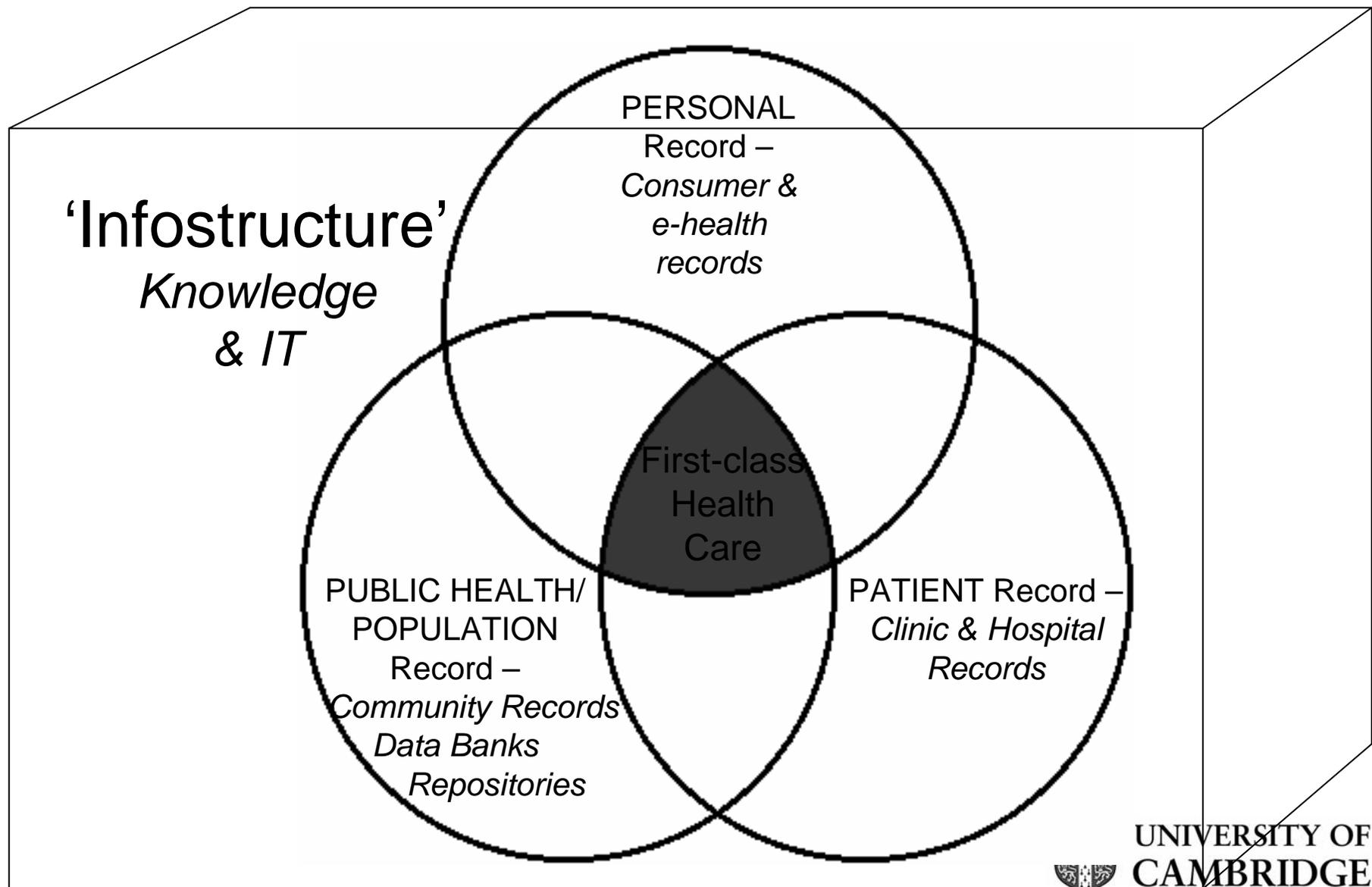
- Patient to Other Patients (P2P)
- Patients to For-profit & Non-profit Organizations (P2B) (P2O)
- Patients with Doctors (P2D)
- Doctors with Health Care Organizations (D2B)
- Doctors with Other Doctors (D2D)
- Healthcare Organizations with Other Healthcare Organizations (B2B)
 - D. Blumenthal, 2002

Timely Valid Communications
(plus a Record of Key Information) is
undervalued today.

People more often need to be reminded than
informed.

- Samuel Johnson

(Even simple reminder systems help.)



Interlocking computer-based health records (C3PRs) supported by knowledge & IT infrastructure

Goal: Computer-based Health Communications & Records (C3PRs)

- **P**ersonal - Health Communications & Records for own uses
- **P**atient – Care System’s Communications & Records
- **C**ommunity/Population - without personal identifiers, records for planning & management

- NCVHS 2000

Relevant Knowledge &
Decision-support
for all with a need & right to
know...

so they make better decisions.

Value & Systems:

Workforce & Research Issues

- Core Competencies* for 2010-
 - Patient-centered & multidisciplinary
 - Evidence-based practice
 - Quality Improvement Approaches
 - Informatics

- We need ‘Human Genome II’ ** Action & Research Plan for Health Systems Informatics

*IOM: Health Professions Education: Bridge to Quality
<http://www.nap.edu>

**Human Genome Project II: <http://www.genome.gov>



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‘Supporting All Facets of Individual Health, Healthcare, & Public Health’

- Values
- Systems
- **Standards**
- Applications
- Technologies
- Laws

Aim for NHII Standards

- Easy Secure Data Exchange among all key players
 - Connected
 - Compatible
 - Interoperable

Tension: Reconciling Proprietary Innovation & Systems Compatibility

- Genomics
 - Intellectual Property (patents/licenses) v. Common Domain
- IT/ Telecommunications
 - Proprietary Systems v. IT (including Health) Commons Domain
- Standards become “etiquettes”
 - Ken Krechmer



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‘Supporting All Facets of Individual Health, Healthcare, & Public Health’

- Values
- Systems
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- **Applications**
- Technologies
- Laws

“I think I know the problem,
please help me manage it*.”

‘Just-in-time’
knowledge service
with strong decision support

me* = patient, non-professional caregiver, health
professional, informaticists, policy wonk, payer,
business leader, etc.

Assured Process Improves Outcomes & Reduces Costs

- Prevention is preferred to detection
- The patient is central
- Focus on the system & not the individual
- Variation in clinical practices is endemic
- Quality can be constantly improved

Evidence-based Adaptive Decision-support Systems

- Evidence-based
 - Locally generated & from literature
- Decision-support systems/templates with ‘just-in-time’ knowledge service at ‘point of care’
- Adaptive – continuously studied & improved against care delivered & patient’s outcomes
 - Sim, Gorman, Greenes et al, JAMIA 2001
- Examples: IHC Utah
 - No. New England CV Group
 - Others



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Evidence-Based Adaptive Decision-Support Systems: Clinical

- Alert – high or low lab values
- Assist – tailoring antibiotic choices
- Calculate & Suggest – adjusting mechanical ventilator
- Critique – rejecting an order
- Diagnose – dx in clinical practice
- Interpret – ECG
- Predict – risk of mortality with severity score
- Remind – give jab
- Structure thinking

Randolph et al: JAMA 1999, from
Pryor, 1990

End-to-end Process Redesign: “Industrial Strength Applets”

- For Citizens, Patients & their Caregivers
- For Patient Care Professionals
- For Public Health Professionals

e-Patient Examples (Clicks & Mortar)

- Cleveland Clinic – C. Martin Harris
 - My Chart, My Consult, My Monitoring
- CareGroup Health System – John Halamka
 - PatientSite
- Palo Alto Clinic – Paul Tang
- PersonalPath.com – David Levy
- Others



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Informed Patient
including
Nonprofessional Caregivers



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The Benefits of the Informed Patient Evidence suggests:

Better informed patients are:

- Less anxious
- Treatment starts earlier
- More satisfied & litigate less
- Follow advice better
- Lower risk interventions are selected
- Healthcare costs drop through more self-management & a more efficient use of resources

- Detmer et al:

“The Informed Patient” Study - 2003



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‘Supporting All Facets of Individual Health, Healthcare, & Public Health’ *including Related Research*

- Values
- Systems
- Standards
- Applications
- Technologies
- Laws

Bioconvergence: Health & Devices

- Miniaturization
- Genomics - “Personalized” Medicine
- Nanotechnology
- Monitoring Devices
- ‘Sniff’ Technology

The Challenge of Knowledge Management

- Evaluating & Integrating Emerging Technologies
- Growth of Knowledge Base
 - Management of Data Bases
 - Identifying the Truly Useful
 - Removing Outdated Practices

‘Supporting All Facets of Individual Health, Healthcare, & Public Health’

- Values
- Systems
- Standards
- Applications
- Technologies
- **Laws**

Coordination vs. Control: A Balancing Act

- Coordination & Integration is key.
- Control gets messy in a Democracy.
 - Who Calls the Shots?
 - Patient
 - Doctor
 - Government
 - Commercial Interests
 - Others

– Ex:

Patient: Why can't I waive my HIPAA privacy 'rights' if I want to gain quicker access to care & use e-health as I wish?

NHII: 2002-03 Scorecard

- **All Time High:**
 - Leadership, Awareness & Collaboration
 - Movement on some Standards
- **Some Progress but much more needed**
 - Public: Private Partnerships
 - Consumer & Population Care Standards
- **Definitely needing help**
 - Financial Incentives
 - Clarity on Role of Government
 - Rapid Advancement Projects
 - Specific High Priority Items

Financial Incentives Really Matter

Everybody loves money. That's why they call it 'money'.

-Movie 'The Heist'



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Role of Government

- “Rules of the Road”
 - Data Standards, Laws & Regulations
- “Building the highway”
 - Public – private partnership for secure data exchange
- “Use of the highway”
 - Private sector with government help for access to capital

Rapid Advancement Projects for 2010

- **Support for Data Exchange Platforms** for 40 “communities” - 18 months
 - Public-Private Partnerships
 - **“Paperless Healthcare” ICT Infrastructures** in 8-10 communities – 5 year
 - **Pilot Projects** – 12 months
 - Consumer Applications
 - Chronic Care Management
 - Public Health Surveillance
- At <http://www.nap.edu>

D² Top Five 2003-4 Priorities

I. Financial Incentives

Implement Loan Program

Fast Track CPOE: Hospital & Ambulatory

II. Standards

Current Work Agenda

Add: Informed Patient & Population Care

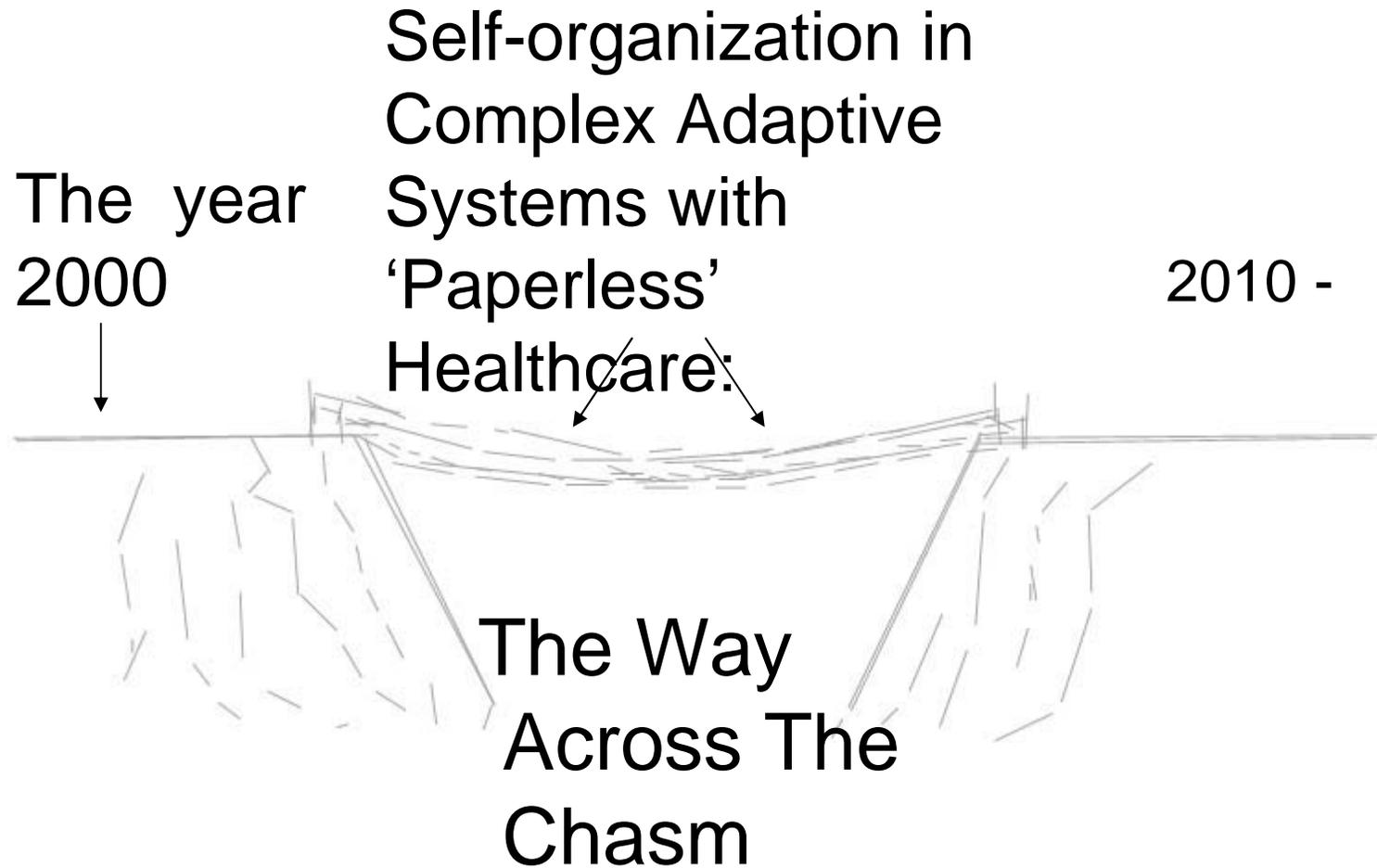
Initiatives

Top 2003-4 Priorities (3-5)

III. National Smart Card initiative for Personal Authentication

IV. Showcase for Implementation the Top Innovation in each of the 8 Priority Areas

V. NHII Action Plan (2003-5) with Annual Targets & Performance Review



John Shaw Billings - 1913

*Creator of what became the U.S.
National Library of Medicine*

There is nothing really difficult if you only begin -- some people contemplate a task till it looms so big, it seems impossible, but I just begin and it gets done somehow. There would be no coral islands if the first bug sat down and began to wonder how the job was to be done.